DEC STD 092-3 Finish and Color Standard - Finish Material Test Requirements

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ABSTRACT: This standard defines the test requirements and test methods applied to the finishes used for Digital parts.

APPLICABILITY: This standard is mandatory for all organizations within Digital Equipment Corporation that produce or procure materials requiring finishes or finished surfaces.

STATUS: APPROVED 11-Dec-1992; use VTX SMC for current status.

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1 INTRODUCTION

1.1 PURPOSE

DEC STD 092-3 defines the test methods that apply to the finishes used on Digital parts. This standard also lists the requirements for decorative paint finishes. The requirements for other finishes are indicated on the individual specifications. This standard lists the test procedures that can be used to evaluate finishes. Finish qualification testing is not limited to this list.

1.2 SCOPE

This standard explains the test procedures, acceptance criteria for decorative paints, and references any related documents for the final quality of finished Digital parts.

1.3 RESPONSIBILITIES

1.3.1 Paint Material Supplier

Suppliers of coating materials are responsible for providing material that meets the requirements of this standard and *DEC STD 092-2 Finish and Color Standard - Finish Material Standard for Suppliers*.

1.3.2 Finish Applicators

Applicators are responsible for supplying product that meets the requirements of this standard, the appropriate finish specification, the applicable part drawing, and *DEC STD 092-1 Finish and Color Standard - Finish Standard for Applicators*.

1.4 DOCUMENT HIERARCHY

In case of conflict, the controlling documents shall be in the following order:

1. Part drawing
2. Individual finish specification
3. DEC STD 092-3

If the test requirements and acceptance criteria are not indicated on the part drawing, see the individual finish specification. If test requirements are not indicated in the finish specification, refer to this standard.

2 TEST METHODS AND PROCEDURES

2.1 ENVIRONMENTAL TESTS

The following test procedures evaluate the performance of a finish in an accelerated environment. Acceptance criteria for decorative paint are stated in the following paragraphs, and Table 1 lists the exposure durations. For all other finishes refer to the appropriate finish specification for acceptance criteria and test duration. However, all finishes at the completion of the environmental tests shall have no evidence of gross film failure, such as loss of adhesion or corrosion.

Table 1: Environmental Testing and Criteria

Tests / Test Method	Air Dry Paints				Baked Paint Note 4		Internal Smooth Painted Note 5	All Other Finishes
	Lacquer, Enamel Note 1		Dual Comp. Urethane	Lowcure Waterborne				
	Aluminum	Steel	Plastic Note 2	Plastic Note 3	Aluminum	Steel	Steel or Aluminum	
5 % Salt Spray ASTM B117	192 h	96 h	192 h	192 h Note 6	288 h	144 h	96 h	96 h
Humidity Fed Std 141C Test method 6201	384 h	288 h	384 h	384 h	384 h	288 h	288 h	288 h
Distilled Water Immersion ASTM D870	384 h	192 h	384 h	384 h	384 h	192 h	192 h	192 h
Corrosive Vapors DEC STD 092–3	96 h	96 h	96 h	——	96 h	96 h	——	96 h

h: hours

Notes:
1. This column is applicable to touch–up and prototype applications.
2. This column is applicable to A41X, A42X, and A43X.
3. This column is applicable to A38X, A39X, and A44X.
4. This column is applicable to A10X, A11X, A12X, A13X, A14X, A15X, and A42X.
5. This column is applicable to A12X only.
6. Only plated and painted panels shall be used for this test.

Metal painted test panels shall be prepared prior to the test by scribing through the paint to the base metal with a sharp instrument. The scribe shall be a line starting approximately 6.35 mm (0.25 inch) from the top edge, running parallel to and approximately 25.4 mm (1.0 inch) from the long edge, and ending approximately 6.35 mm (0.25 inch) from the bottom edge of the panel. Panels that were scribed prior to the test may have corrosion at the scribe line; the maximum permissible creep shall be 3.175 mm (0.125 inch) from the scribe line.

2.1.1 Salt Spray

ASTM B117 - Standard Method of Salt Spray (Fog) Testing shall be used to determine the salt spray resistance using a 5% salt concentration. Panels shall be suspended vertically in the chamber. See Table 1 for the test duration when evaluating paint, and see the individual finish specification for acceptance criteria and exposure duration for platings, conversion coatings, and paints not listed in Table 1.

2.1.2 Humidity

Federal Standard 141C - Paint, Varnish, Lacquer and Related Materials, Methods of Inspection, Sampling and Testing, Method 6201 - Humidity Test shall be used to determine humidity resistance using 40/95 (40°C and 95% relative humidity). See Table 1 for the test duration when evaluating paint, and see the individual finish specification for acceptance criteria and exposure duration for platings, conversion coatings, and paints not listed in Table 1.

2.1.3 Distilled Water Immersion

ASTM D870 - Testing Water Resistance of Coatings Using Water Immersion shall be used to determine the water resistance of coatings. This test is primarily used for paints. See Table 1 for the test duration when evaluating paint, and see the individual finish specification for acceptance criteria and exposure duration for paints not listed in Table 1.

2.1.4 Corrosive Vapors

NOTE

This test is not recommended for new products.

The test specimens shall be exposed, at room temperature, to concentrated atmospheres of HF, HCL, SO_2, CL_2, H_2S, and NH_3. The concentration of each chemical fume shall be within the limits established by the American Conference of Governmental and Industrial Hygienists publication *Threshold Limit Value for Toxic Dusts, Fumes and Mists*. The test for each individual chemical is to be performed separately on the same test specimens. See Table 1 for the test duration when evaluating paints.

2.1.5 DEC STD 102 Temperature/Humidity

DEC STD 102-1 Environmental Standard for Computers and Peripherals - Temperature, Humidity, and Altitude Test Requirements , Temperature/Humidity Tests - Nonoperating, shall be used for this test. This test consists of exposures of temperatures between -40°C (-40°F) and 66°C (151°F) and of relative humidities up to 95%. See the individual finish specification for acceptance criteria.

2.1.6 Battelle, Class II

Battelle, class II is used to test the finishes performance in a simulated industrial environment for accelerated aging studies. Acceptance criteria and test duration must be identified on a per part basis.

2.2 APPEARANCE QUALITY TESTS

ASTM D1729 Visual Evaluation of Color Differences of Opaque Materials or DEC STD 092-1, subhead 4.3, shall be used to visually test the appearance of the test specimen. This visual test will take precedence over the following gloss, color, and texture tests.

2.2.1 Gloss

ASTM D523 - Specular Gloss, 60 Degree shall be used to determine gloss appearance quality. Gloss tests are only to be performed on smooth surfaces. See Table 2 for the acceptable average gloss readings for paints and see the individual finish specification for readings for paints not listed in Table 2.

Table 2: Appearance Quality Testing and Criteria

Tests / Test Method	Air Dry Paints				Baked Paint Note 4		Internal Smooth Painted Note 5	All Other Finishes
	Lacquer, Enamel Note 1		Dual Comp. Urethane	Lowcure Waterborne				
	Aluminum	Steel	Plastic Note 2	Plastic Note 3	Aluminum	Steel	Steel or Aluminum	
GLOSS: ASTM D523 Smooth Parts	18 units +/– 3	18 units +/– 3	18 units +/– 3	18 units +/– 3	18 units +/– 3	18 units +/– 3	18 units +/– 5	———
68 Light Gray	25 units +/– 3	25 units +/– 3	25 units +/– 3	25 units +/– 3	25 units +/– 3	25 units +/– 3	———	———
Indicator Panels	25 units +/– 5	25 units +/– 5	25 units +/– 5		25 units +/– 5	25 units +/– 5	———	———
Color/Texture	Must match samples supplied by Digital							Note 6

1. This column is applicable to touch–up and prototype applications.
2. This column is applicable to A41X, A42X, and A43X.
3. This column is applicable to A38X, A39X, and A44X.
4. This column is applicable to A10X, A11X, A12X, A13X, A14X, A15X, and A42X.
5. This column is applicable to A12X only.
6. Color per individual specification and color sample, if applicable.

2.2.2 Color

ASTM D2244 - Calculation of Color Differences From Instrumentally Measured Color Coordinates shall be used to measure the color differences between a master control sample and test sample. See the last field of the finish specification number for the indicated color.

2.2.3 Texture

The texture may be created by the base material or created by the paint. The texture shall match the control sample supplied by Digital. See the part drawing and finish specification for indicated texture.

2.3 PHYSICAL TESTS

2.3.1 Solvent Resistance

Solvent resistance (completeness-of-cure) is determined by placing three drops of the solvent on a coated panel and rubbing with a cotton swab or equivalent. The solvent shall evaporate before the coating is attacked. The rubbing should be limited to 100 rubs if the solvent has not evaporated. It shall be considered a failure if the coating is removed to the base material. It shall be acceptable if a slight removal of coating shows on the cotton swab, and if the coating is softened slightly but resumes original hardness after five minutes. The test area is allowed to show discoloration. This test is primarily used for paints. See Table 3 for specified solvent.

2.3.2 Wear Resistance

ASTM D4060 - Abrasion Resistance of Organic Coatings by the Taber Abraser shall be applied using a Taber instrument with CS10 wheel and 1000 gram weight. The test panel shall have the required film thickness prior to test. No base material shall be visible through the finish at the completion of the test. See Table 3 for the amount of cycles for paints, and see the individual specification for the amount of cycles for platings, conversion coatings and paints not listed in Table 3. Coating weight loss may also be determined by weighing the panel before and after the cycling.

2.3.3 Flexibility and Adhesion

2.3.3.1 Flexibility

ASTM D522 - Mandrel Bend Test of Attached Organic Coatings, Method B, shall be used to determine the flexibility and adhesion of the paint film. There shall be no cracking or flaking of the paint after the test is complete. Disregard any cracking or flaking within 6.35 mm (0.25 inch) of the panel edge. This test is primarily used for paints. See Table 3 for the diameter of the mandrel required.

2.3.3.2 Bend

ASTM B571 - Adhesion of Metallic Coatings Test 3.1, shall be used to determine the flexibility and adhesion of platings. This test is primarily used for plating on metals. See the individual finish specification for the acceptance criteria.

2.3.3.3 Impact

ASTM D2794 - Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) shall be used to determine flexibility and adhesion of the finish. A Gardener 160 inch-pound impact tester with a 2-pound rod and a 15.9 mm (0.625 inch) diameter indenter shall be used. There shall be no loss of adhesion or flaking of the paint film at the completion of the test. See Table 3 for the required inch-pounds for paints, and see the individual finish specification for the required inch-pounds and the acceptance criteria for platings, conversion coatings, and paints not listed in Table 3.

Table 3: Physical Testing and Criteria

Tests / Test Method	Air Dry Paints				Baked Paint Note 4		Internal Smooth Painted Note 5	All Other Finishes
	Lacquer, Enamel Note 1		Dual Comp. Urethane	Lowcure Waterborne				
	Aluminum	Steel	Plastic Note 2	Plastic Note 3	Aluminum	Steel	Steel or Aluminum	
Solvent Resistance DEC STD 092–3	VM & P Naptha	VM & P Naptha	MEK	VM & P Naptha, Isopropyl Alcohol	MEK	MEK	MEK	——
Wear Resistance (Taber Abrasion) ASTM D4060	700 cycles	700 cycles	700 cycles Note 7	700 cycles Note 6	1000 cycles	1000 cycles	500 cycles	——
Scratch Hardness (Princeton) ASTM D2197	200 g	200 g	900 g	900 g	900 g	900 g	700 g	——
Flexibility ASTM D522	6.35 mm (0.25 inch)	6.35 mm (0.25 inch)	6.35 mm (0.25 inch) Note 7	6.35 mm (0.25 inch) Note 7	3.18 mm (0.125 inch)	3.18 mm (0.125 inch)	3.18 mm (0.125 inch)	——
Impact (Direct/ Indirect) ASTM D2794	9040 N.mm (80 in.lb)	9040 N.mm (80 in.lb)	9040 N.mm (80 in.lb) Note 7	9040 N.mm (80 in.lb) Note 7	11,300 N.mm (100 in.lb)	11,300 N.mm (100 in.lb)	5650 N.mm (50 in.lb)	——
Adhesion: (Tape Test) Cross hatch ASTM D3359 Test Method B	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	——
Non–destructive DEC STD 092–3	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass	Must Pass
Thickness:								
Smooth	0.025 mm +/– .008 (1.0 mil +/– .3) Note 10	0.025 mm +/– .008 (1.0 mil +/– .3) Note 11	0.025 mm +/– .008 (1.0 mil +/– .3) Note 8	0.025 mm +/– .008 (1.0 mil +/– .3) Note 8	0.025 mm +/– .008 (1.0 mil +/– .3) Note 10	0.025 mm +/– .008 (1.0 mil +/– .3) Note 11	0.025 mm +/– .010 (1.0 mil +/– .4) Note 12	Note 9
Texture	0.038 mm +/– .008 (1.5 mil +/– .3) Note 10	0.038 mm +/– .008 (1.5 mil +/– .3) Note 11	0.038 mm +/– .008 (1.5 mil +/– .3) Note 8	0.038 mm +/– .008 (1.5 mil +/– .3) Note 8	0.038 mm +/– .008 (1.5 mil +/– .3) Note 10	0.038 mm +/– .008 (1.5 mil +/– .3) Note 11	——	Note 9

1. This column is applicable to touch–up and prototype applications.
2. This column is applicable to A41X, A42X, and A43X.
3. This column is applicable to A38X, A39X, and A44X.
4. This column is applicable to A10X, A11X, A12X, A13X, A14X, A15X, and A42X.
5. This column is applicable to A12X only.
6. Bonderite 1000, or equivalent, panels shall be used for this test and the paint must be at 1 mil thickness.
7. Bonderite 1000, or equivalent, panels shall be used for these tests.
8. A Tooke gage may be used for these measurements.
9. Per individual finish specification.
10. ASTM B244 shall be used for these measurements.
11. ASTM B499 shall be used for these measurements.
12. ASTM B244 shall be used for aluminum measurements; ASTM B499 shall be used for steel measurements.

2.3.4 Adhesion

2.3.4.1 Tape Test - Cross Hatch

ASTM D3359 Measuring Adhesion by Tape Test, Method B - Cross Cut Tape Test, shall be used to determine the adhesion of the finish to the base material. The parallel cuts shall be approximately 3 mm (0.125) inch apart, and approximately 25 mm (1.0 inch) long. Scotch Brand #600, 25 mm wide (1 inch) tape shall be applied over the scribed area using uniform pressure. There shall be no more than 5% loss of film when the tape is removed. See Table 3 for paints, and see the individual finish specification for acceptance criteria for platings, conversion coatings, and paints not listed in Table 3.

2.3.4.2 Tape Test - Non-Destructive

Scotch Brand #600, 25 mm (1 inch) wide shall be applied on the surface with uniform pressure. Within 90 ± 30 seconds of application, the tape shall be removed in a quick motion at 90 degrees to the surface. For acceptance, the finish shall remain unbroken after the tape is removed. See Table 3 for paints, and see the individual finish specification for acceptance criteria for platings, conversion coatings, and paints not listed in Table 3.

2.3.4.3 Scratch Hardness

ASTM D2197 - Adhesion of Organic Coatings by Scrape Adhesion shall be performed using a Princeton scratch tester with a sapphire needle. For acceptance, the coating shall not be sheared from the panel surface. This test is primarily used for paints. See Table 3 for the amount of weight required.

2.3.4.4 Thermal Cycle

ASEP TP-201 - Dynamic Test of Plate Adhesion by Thermal Cycling shall be used to test the adhesion between a coating and a plastic substrate. The samples will be placed directly into a chamber at the specified temperature. The samples will be subjected to the following conditions: 1 hour at 85°C (185°F), then 1/2 hour at 21°C (70°F), then 1 hour at -40°C (-40°F), and 1/2 hour at 21°C (70°F). For high temperature substrate materials or product applications, the high limit of the cycle should be increased to 75% of the substrate's heat distortion temperature. At the conclusion of the test there shall be no signs of coating delamination, and the coating shall pass the Non-Destructive Adhesion Tape Test. This test is used primarily for plated plastics. See the individual finish specification for acceptance criteria.

2.3.4.5 Burnishing Test

ASTM B571 - Adhesion of Metallic Coatings shall be used to determine adhesion of platings. After the sample is rubbed for 15 seconds, the test area shall not have any blisters, lifting of the plating, or flaking of the plating. This test is used primarily for platings. See the individual finish specification for acceptance criteria.

2.3.4.6 Heat-Quench Test

ASTM B571 - Adhesion of Metallic Coatings shall be used to determine adhesion of platings on metals. After the test, flaking or peeling of the plating is unacceptable. An isolated blister is acceptable. This test is used primarily for platings on metal. See the individual finish specification for acceptance criteria.

2.3.4.7 Thermal Shock

ASTM B733 - Autocatalytic Nickel-Phosphorus Coatings on Metals shall be used to determine adhesion of electroless platings on metals. After the test, blistering, lifting, or peeling of the plating is unacceptable. This test is used primarily for electroless nickel plating on metal substrates. See the individual finish specification for acceptance criteria.

2.3.4.8 Scribe

Scrape the surface of the plated articles to expose the base material. Examine the sample at four times magnification to determine if removal has been caused by the cutting away of an adherent plate or by the lifting of a non-adherent plate. This test is primarily used for platings. See the individual finish specification for acceptance criteria.

2.3.5 Film Thickness Measurements

For all of the following methods, refer to the individual finish specification for the appropriate method.

2.3.5.1 Beta Backscatter

ASTM B567 - Measurement of Coating Thickness by the Beta Backscatter Method. This nondestructive method is used for metallic and nonmetallic coatings on metallic and nonmetallic substrates.

2.3.5.2 Coulometric

ASTM B504 - Measurement of Thickness of Metallic Coatings by the Coulometric Method. This destructive method is used for metallic coatings.

2.3.5.3 Eddy Current

ASTM B244 - Measurements of Thickness of Anodic Coatings on Aluminum and other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments. This nondestructive method is used for nonconductive coatings on a nonmagnetic basis metal.

ASTM D1400 Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base. This nondestructive method is used for nonconductive coatings on a nonferrous basis metal.

2.3.5.4 Magnetic

ASTM B499 - Measurement of Coating Thicknesses by the Magnetic Method : Nonmagnetic Coatings on Magnetic Basis Metals. This nondestructive method is used for nonmagnetic coatings on a magnetic basis metal.

ASTM B530 - Measurement of Coating Thicknesses by the Magnetic Method: Electrodeposited Nickel Coatings on Magnetic and Nonmagnetic Substrates. This nondestructive method is used for electrodeposited nickel coatings on magnetic or nonmagnetic base materials.

ASTM D1186 - Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base. This nondestructive method is used for nonmagnetic coatings on ferrous base materials.

2.3.5.5 Microscopical

ASTM B487 - Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section. This destructive method is used for metal and oxide coatings.

2.3.5.6 Tooke Gage (Paint Inspection Gage OG202)

The Tooke gage measures total coating thickness of paint on plastic substrates. The instrument is designed to measure paint film thickness by microscopic observation. This destructive method is used only for paints.

2.4 ELECTRICAL TESTS

2.4.1 Surface Resistivity

The following procedures describe the method of determining the surface resistance of coatings applied to metal or plastic substrates, for the purpose of shielding and/or static discharge protection. These test methods are used for platings, conversion coatings, and conductive paints. See the individual finish specification or part drawing for the acceptable values.

2.4.1.1 DC Ohms Per Square

Place probe on the conductive surface in such a manner that the two square brass electrodes make full contact with the surface. Take several readings over the entire coated surface. The readings obtained will be ohms per square. Any extremely high or low values should be ignored, due to error.

The following notes may assist in performing this test:

- The brass contact surfaces of the probe should be cleaned prior to performing the test. A light abrading may be used if care is taken not to damage the contact area.
- Check the system setup using either a known resistor, by short-circuiting the contacts of the probe to establish lead resistance, or by zeroing the ohmmeter.
- The contact surfaces must be free from foreign materials, or a false reading will be evident.
- The body of the probe, made of a nonconductive material, should be pressed over the brass contacts until the body comes in contact with the surface being tested.
- A slight movement of the probe on the surface may be needed to establish contact, however, only a slight movement is needed; too much abrading could damage the finish.
- The probe should be calibrated periodically.

Equipment required:

Ohms per square probe, Digital part number 47-00122-01 or equivalent
Ohmmeter with a resolution of 0.001 ohm

2.4.1.2 DC Point-To-Point

Place the point contacts at diagonal corners of the part, or at the locations specified on the part drawing. The readings obtained will be ohms. Any extremely high or low readings should be ignored, due to error.

The following notes may assist in the test procedure:

- Check the system setup using either a known resistor, by short-circuiting the contacts of the probe to establish lead resistance, or by zeroing the ohmmeter.
- The contact surfaces must be free from foreign materials, or a false reading will be evident.

Equipment required:

Ohmmeter with resolution of 0.001 ohm

2.4.2 Shielding Effectiveness

The following test methods are used to determine the shielding effectiveness of electromagnetic shielding materials. These test methods are intended for ranking purposes only. These tests are used for platings and conductive paints.

2.4.2.1 Electromagnetic Shielding Effectiveness

ASTM ES7-83 - Electromagnetic Shielding Effectiveness of Planar Materials
Two methods are included in this specification: the transmission-line method and the dual-chamber method. The transmission-line method tests far-field data, and the dual-chamber method tests near-field data.

2.4.2.2 Electromagnetic Shielding Effectiveness

ASTM D4935 - Measuring the Electromagnetic Shielding Effectiveness of Planar Materials
This method provides a procedure for measuring the electromagnetic shielding effectiveness of a planar material due to a plane-wave, far- field electromagnetic wave.

APPENDIX A REFERENCED DOCUMENTS

A.1 Digital Documents, EL-Class

Document Number	Document Title
EL-00092-01	*DEC STD 092-1 Finish and Color Standard - Finish Standard for Applicators*
EL-00092-02	*DEC STD 092-2 Finish and Color Standard - Finish Material Standard for Suppliers*
EL-00102-01	*DEC STD 102-1 Environmental Standard for Computers and Peripherals — Temperature, Humidity, and Altitude Test Requirements*

A.2 Documents External to Digital

Document Number	Document Title
.	*American Conference of Government and Industrial Hygienists publication - Threshold Limit Value for Toxic Dusts, Fumes, and Mists*
ASEP TP-201	*Dynamic Test of Plate Adhesion by Thermal Cycling*
ASTM B117	*Standard Method of Salt Spray (FOG) Testing*
ASTM B244	*Measurements of Thickness of Anodic Coatings on Aluminum and Other Nonconductive Coatings on Nonmagnetic Basis Materials with Eddy-Current Instruments*
ASTM B487	*Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section*
ASTM B499	*Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals*
ASTM B504	*Measurement of Thickness of Metallic Coatings by the Coulumetric Method*
ASTM B530	*Measurement of Coating Thicknesses by the Magnetic Method: Electrodeposited Nickel Coatings on Magnetic and Nonmagnetic Substrates*
ASTM B567	*Measurement of Coating Thickness by the Beta Backscatter Method*
ASTM B571	*Adhesion of Metallic Coatings*
ASTM B733	*Autocatalytic Nickel-Phosphorous Coatings on Metals*
ASTM D1186	*Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base*
ASTM D1400	*Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base*
ASTM D1729	*Visual Evaluation of Color Differences of Opaque Materials*
ASTM D2197	*Adhesion of Organic Coatings by Scrape Adhesions*
ASTM D2244	*Calculation of Color Differences From Instrumentally Measured Color Coordinates*
ASTM D2794	*Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)*
ASTM D3359	*Measuring Adhesion by Tape Test*
ASTM D4060	*Abrasion Resistance of Organic Coatings by the Taber Abraser*
ASTM D4935	*Measuring the Electromagnetic Shielding Effectiveness of Planar Materials*
ASTM D522	*Mandrel Bend Test of Attached Organic Coatings*

Document Number	Document Title
ASTM D523	*Specular Gloss, 60 Degree*
ASTM D870	*Testing Water Resistance of Coatings Using Water Immersion*
ASTM ES7-83	*Electromagnetic Shielding Effectiveness of Planar Materials*
FED. STANDARD 141C	*Federal Standard 141C - Paint, Varnish, Lacquer, and Related Materials, Methods of Insoection, Sampling, and Testing - Method 6201 - Humidity Test*

A.3 Ordering Information

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Threshold Limit Value for Toxic Dusts, Fumes and Mists, Federal Register Vol. 36, No. 105, May 29, 1971.

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